

No. XXII.—REMARKS ON THE EMBRYOLOGY OF A SNAKE.

It has been my good fortune this year to acquire snake's eggs with the embryo in a very early stage of development. Doubtless the ontogeny of ophidians has been worked out before by men of much greater ability than myself. I have, however, never seen any account of the development of the snake, and have tried unsuccessfully for some years to see the embryos in a very early stage. I hoped, if I could get them early enough, to be able to throw some light on the phylogeny, through studying the ontogeny.

The youngest embryos I extracted from eggs believed to belong to *Tropidonotus stolatus* and when unravelled measured only $1\frac{1}{8}$ " in length. The hatchlings of this snake I know to be from $5\frac{1}{2}$ " to $6\frac{3}{8}$ " inches long, so the length of these embryos show they are in a very early stage of development, still they are not young enough yet to satisfy me. The following points arrested my attention. The head posteriorly has a large swelling (the primary cerebral vesicle) denoting the early development of the brain. This is, at this stage, a single rounded eminence. Later it is divided by a median sulcus into two (fig. H). The eye is large, and the pupil discernible. The upper jaw is fully developed, but the lower, which is developed like the upper from the first gill arch, is in a very rudimentary state (see fig. F 2). The mouth is very large. No trace of an external ear orifice can be discerned. Only one gill arch is present, and there are no branchial clefts or fringes. The heart is large, and could be seen pulsating for a long time (half an hour) after removal of the embryo from the egg. The two auricles and the single ventricle are very apparent. I was much disappointed to find no trace of either fore or hind limbs.

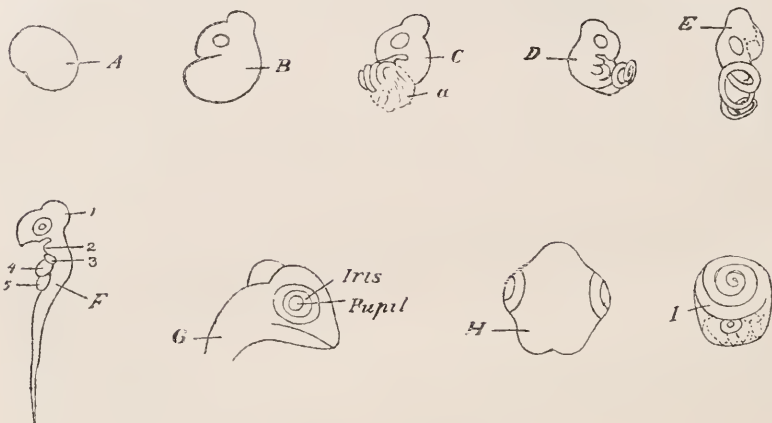
Figures G, H and I are from a larger embryo measuring 3 inches. Here the lower jaw is properly developed. The pupil and iris are distinct, and the primary cerebral vesicle is relatively smaller, and has become divided mesially. The genitals in the males are relatively long, and are quite external. At what date they become ensheathed I have not yet been able to discover, but it is late during life within the egg.

Figures A to F shows successive stages in development.

- A. The foetus in membranes.
- B. The foetus still in membranes the head freed.
- C. Membranes peeled off, still partially adherent (a).
- D. In profile showing spiral form of body.
- E. Head seen three-quarter view with large cerebral vesicle on top.
- F. Foetus unravelled. 1. The primary cerebral vesicle. 2. Rudimentary lower jaw. 3, 4, 5, Heart.

G. H. Head of another more advanced embryo (enlarged.)

I. The same embryo as G, & H, shown life size lying in its membranes.



F. WALL, C.M.Z.S., MAJOR, I.M.S.

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No. XXIII.—NOTES ON A SOCIAL SPIDER, *STEGODYPHUS*
SARASINORUM, KARSCH.

The genus *Stegodyphus* belongs to the family *Eresidae*, which latter is divided off from most of the Indian Arachnomorphæ by the possession of a *cribellum* and its complementary organ the *calamistrum*. To save a special reference to those unfamiliar with the anatomy of spiders, it will not be out of place to state that the *cribellum* is a spinning plate placed immediately in front of the spinners, and *calamistrum* is a term applied to a single or double row of short hairs on the protarsus of the fourth pair of legs. The organs are peculiar to a group of Arachnomorphæ including the *Eresidae*, and one organ is invariably accompanied by the other.

Stegodyphus sarasinorum is a social spider. The members of a colony build a large saccular web mixed with oval passages, somewhat after the pattern of a sponge, of a special dense texture. The special organs above described are no doubt particularly useful for weaving the peculiar web. The spiders may be seen rapidly moving the hind pair of legs back and forwards across the spinning mammillæ and the *cribellum*, and turning out the peculiar texture of web, of which their cities are constructed.

The outside of the web is very viscous and even powerful insects can rarely win free once they have struck it.